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ABSTRACT

Interest in the attitude-behavior relationship has generated much research since the concept was introduced into research in 1934. This study examined the relationship between values and behavioral intentions, specifically in regard to interest in entering a particular medical specialization. Using structural equation techniques and a longitudinal design, six theoretical models linking these variables were tested. The study investigated whether the specificity principle from the attitude-behavior research would apply to values and behavioral intentions as well. Using structural equation techniques, it was found that the specificity principle could be applied to the value-behavior domain: models in which general values predicted interests fit second- and sixth-year data significantly better than did models in which specific values predicted interests. For the first-year data, specific and general value models were not significantly different. The study also examined whether values would better predict behavioral intention after experience with the valued field of interest had occurred. Longitudinal data from 250 students in an integrated bachelor of arts-doctor of medicine program (Inteflex) at the University of Michigan revealed that the amount of variance explained by the theoretical models increased with experience when general values were used as predictors of interest, and decreased when specific values were used as predictors. These findings suggest implications in connection with the basic debate about the difference between inference and preference. (Author/NB)

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Prediction of Interests from Values: A Longitudinal Investigation

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Abstract

We examined the relationship between values and behavioral intentions, specifically in regard to interest in entering a particular medical specialization. Using structural equation techniques and a longitudinal design, six theoretical models that link these variables were tested. In the first step of our study we investigated whether the specificity principle from the attitude-behavior research applies to values and behavioral intentions as well. Using structural equation techniques, we found that the specificity principle cannot be applied to the value-behavior domain: models in which general values predict interests fit second and sixth year data significantly better than models in which specific values predict interests. For the first year data, specific and general value models were not significantly different. Our second research goal was to examine whether values would better predict behavioral intention after experience with the valued field of interest had occurred. These two hypotheses were tested using longitudinal data from 250 students in an integrated A.B./M.D. program at the University of Michigan. We found that the amount of variance explained by our theoretical models increased with experience when general values were used as predictors of interest, and decreased when specific values were used as predictors. The implications of these findings in connection with the basic debate about the difference between inference and preference are discussed.

Prediction of Interests from Values: A Longitudinal Investigation

Interest in the attitude-behavior relationship has generated a great deal of research since LaPiere (1934) introduced this topic into research. After a period of mainly demonstrating inconsistencies between behavior and attitude (Wicker, 1969), recent investigations have been motivated by the assumption that individuals tend to act in accordance with their attitudes (Cooper & Croyle, 1984). The main goal of this recent research has been to specify the conditions under which attitudes predict behavior.

Two of the more recent contributions are considered in this paper. The first is Fishbein and Ajzen's (1975) specificity principle. The second is the finding that attitudes are better predictors of behaviors after direct experience with the attitude object has taken place (e.g., Fazio & Zanna, 1981). We will consider these two research hypotheses and see if they hold up for the value domain as well. Specifically, we will investigate whether 1) specific values are better predictors of specific behavioral intentions than general values and, 2) whether values better predict behavioral intention after experience with the valued field of interest has occurred.

Fishbein and Ajzen (1975) have pointed out that the strength of the relationship between behavior and attitude is a function of the degree to which both are measured at the same level of specificity. In other words, attitudes and behaviors can be expected to be consistent with one another when they are measured at comparable levels of abstraction.

Recent research on experience as a mediating variable in the

attitude-behavior relationship indicates that attitudes based on direct experience with the attitude object are often better predictors of behavioral intentions than attitudes that are not based on direct experience (Sherman, Presson, Bensenberg, Corty, & Olshavsky, 1982).

In the present study we will investigate whether these two basic findings for the attitude-behavior relationship can be applied to the affective domain, that is, to the relationship between behavioral intentions and values. First, can a behavioral intention such as interest in entering a medical specialty be predicted by knowing the general or specific values an individual holds? Second, is the value-interest relationship affected by the experience one has had with related situations?

Values compared to attitudes

Originally, attitudes had been conceptualized as having three interrelated components: cognitive, affective, and behavioral (Fishbein & Ajzen, 1975). More recently, because of the dominance of the cognitive perspective in psychology, the cognitive aspect of attitudes has been mainly considered. Wyer (1974) for example, proposed that an individual's "attitude toward an object is interpretable in terms of his judgment of the object's membership in a cognitive category" (p. 24).

When values are considered, on the other hand, the affective component is stressed, i.e., values can be conceptualized as preferred principles or standards. Feather (1975) and Mandler (1982) discussed the evaluative dimension of values (i.e., goodness-badness, positiveness-negativeness). Rokeach (1973) recognized the affective aspect of values

when he stated, "A value is affective in the sense that a person can feel emotional about it, be affectively for or against it, approve of those who exhibit positive instances of it and disapprove of those who exhibit negative instances of it" (p. 7). Moreover, Mandler (1982) argued that conscious emotion is constructed from values and autonomic arousal. Thus, while there are affective and cognitive components to both attitudes and values, attitudes can be construed as belonging more strongly to the cognitive domain, and values as belonging more strongly to the affective domain.

To summarize our point of view, we see values and attitudes as being as separate as affect and cognition or, as Zajonc (1980) proposed: as separate as belonging to feeling versus thinking, or as preferences versus inferences. After defining these two concepts, we tested whether the hypotheses develcped in the attitude domain can be useful in the value domain.

Specificity principle

The first goal of the present study was to investigate whether the specificity principle from the attitude-behavior research holds up for the value domain. Therefore, we first had to examine whether values vary. We argue that values differ in their level of abstraction as well. The general universal values which Rokeach (1973) describes are the most abstract. There are also values which are less general and, therefore, less abstract. These are the values that are specifically related to particular areas of life such as marriage, family, career, etc. In the present study we will examine the importance of these different values for the

behavioral intention. When applying Fishbein and Ajzen's (1975) specificity principle, we encounter the problem that one might argue that values are inherently abstract and that behaviors are inherently specific (Kahle & Timmer, 1983). The solution proposed by Kahle et al is that a large number of behaviors be examined (i.e., Fishbein & Ajzen's multiple act criteria) so that behavior becomes commensurately abstract with value. However, all values are not necessarily the general universal kind described by Rokeach and others. Some values can be measured at a less abstract level. Values related to a particular occupation or career interest, for example, are less abstract and more specific than the general universal values of wisdom, freedom, and mature love. Thus, specific values can be measured at levels which are more or less comparable to the levels of the behavior of interest. Consequently, one would expect to find these specific values to be better predictors of a particular behavioral intention than the more abstract general values. Therefore, we attempted to determine whether values that are specific to a particular area of an individual's life are better predictors of his/her interest in that area than are his/her general values.

In the present study, we will look at medical students and their specific behavioral intentions (which in this study are interest in medical specialization). Applying the specificity principle for our first hypothesis, we expect that specific values are better predictors of interest in a particular medical specialty than are general values.

Values and interest in medical specialization

There has been some research on values and specialty preference in

medicine which, theoretically, shows quite an interesting pattern. What has been found is that general values, while being fairly good predictors of preference for specialization in psychiatry and surgery, offer little predictive value for other areas of medical specialty (e.g., Paiva & Haley, 1971; Schumacher, 1963). Values that are specific to medicine, on the other hand, appear to predict with a fair amount of accuracy preference for the primary care specialties (e.g., Burkett & Gelula, 1982; Coker, Miller, Back, & Donnelly, 1960). These findings contradict our theoretical expectations and, therefore, we attempted to replicate these findings and try to make sense of them. Our second hypothesis states that: surgery and psychiatry can be better predicted by general values while specific values are better predictors of other medical specialties.

Experience as a moderating variable

Sherman et al have recently found support for the argument that attitude-behavior consistency is increased when direct experience with the attitude object is taken into account. In their 1982 investigation of intentions of nonsmoking adolescents to smoke cigarettes, Sherman and his colleagues found that the intentions of the subjects to smoke were better predicted by the subjects' attitudes toward smoking as their direct experience with smoking increased. Direct experience, they argued, increases the relative weight of the attitude component because attitudes based on direct experience are more accessible and, thus, are used more in judgments and intentions of behavior.

Using this same line of reasoning, we propose to show that the values one holds can better predict one's behavioral intention if experience

with the valued object or situation is taken into consideration. The more experience individuals have with the things they value, the more certain they will be of their preference for these valued things. We argue, then, that direct experience with the valued object or situation makes the value more salient and therefore increases the weight of the value component in predicting behavioral intention (Hypothesis 3).

Finally, putting these two lines of reasoning together, we expect to show that specific values become increasingly better predictors of interest in medical specialization as the medical students in our sample gain more experience via medical school courses related to the specialty and through their participation in clinical practice within the specialty. This reasoning does not apply for general values, however, and with the medical school experience general values should predict less well than specific values (Hypothesis 4).

Method

Sample

Data were collected from 160 men and 90 women who entered a six year B.A./M.D. program at the University of Michigan during 1975 through 1979 (graduating classes of 1982-1986). The variables chosen for the analyses were taken from subsets of questionnaires administered during the last year of high school (Year 1), and at the beginning of the second (Year 2) and sixth year (Year 6) of the medical program. These subsets contain the students' answers to questions regarding their preference for values about life in general, their preferences for values associated with particular areas of medical specialty, and their interest in specific areas

of medical specialization. Respondents rated the items on a five point scale which ranged from 1 = very much to 5 = very little.

Analyses

These hypotheses were examined using the LISREL-VI maximum likelihood analysis of linear structural equations program (Jöreskog and Sörbom, 1984). A depiction of the hypothesized relationships between values and interests are given in Figures 1 and 2. Model 1 (in Figure 1) shows the theoretical model for the prediction of interests from general values, and Model 2 (Figure 2) presents the theoretical model for the prediction of interests from specific values. We analyzed Model 1 as well as Model 2 for the first (Models 1a and 2a), second (Models 1b and 2b), and sixth years (Models 1c and 2c) of the medical program.

General values. In Model 1 there are four latent exogenous variables which comprise the general values: The first latent variable reflects the value of personal development; the second is a value of material achievement; the third is a political-social value at a macro level (e.g., the importance of social issues, community involvement); and the fourth is a political-social value at a micro level (e.g., importance of cooperation, empathy).

Specific values. Model 2 has three latent exogenous variables: the first is a person-oriented value since it indicates social and humanitarian concerns in relation to the practice of a medical specialty; the second is a value of the material comfort and status connected with medical specialization; and the third is a value of personality or temperament as

it relates to medical specialization.

Interests. In both models we include seven endogenous latent variables. These are the seven fields of interests in medical specialization (family practice, internal medicine, surgery, obstetrics/ gynecology, pediatrics, psychiatry, and radiology/ anesthesiology/ pathology).

Results

Hypothesis 1 states that the specificity principle from the attitude-behavior domain also applies to the value-interest domain. We expected that a model in which specific values predict interests would have a significantly better goodness of fit than a model in which interests are predicted by general values. We tested this hypothesis independently for each of the three years we studied. This means that we compared Models 1a and 2a (Year 1), Models 1b and 2b (Year 2), and Models 1c and 2c (Year 6). We found a rather interesting result. For the first year, the general and specific values are not significantly different, χ^2_{diff} (df_{diff} = 20, N = 233) = .48, p = ns. However, when the models for the second and sixth year models were compared (Year 2: χ^2_{diff} (df_{diff} = 27, N = 226) = 84, $p < .001$; Year 6: χ^2_{diff} (df_{diff} = 11, N = 162) = 71, $p < .001$), we found that they are significantly different, but in the *opposite* direction from what we expected. That is, general values predict interest in medical specialization significantly better than specific values in the second and sixth years of medical school.

In Hypothesis 2 we investigated whether we could replicate the findings in the medical education literature which showed that general

values predict preference for surgery and psychiatry, while specific values predict primary care specialties. An examination of the main diagonals of the *psi* matrices in Models 1 and 2 reveals the amount of error variance of the endogenous variables. The difference between 1 and *psi* tells us how much variance of the respective latent endogenous variables is explained by the exogenous variables. The variance of the interest variables which is explained by the general and specific values is shown in Table 2. An examination of Table 2 helps us to reinterpret the findings in the medical education literature. We see that in the sixth year all of the interest in medical specialization is explained to a larger degree by general values than by specific values. In the first and second years, however, five of the seven interests were better predicted by specific values than by general values. Therefore, we argue that it is not so much a function of *which* specialty we consider, but that the amount of experience with the specialty is crucial.

This brings us to Hypotheses 3 and 4 for explaining how interests are predicted. Concerning our second theoretical interest, the impact of experience on the value-interest relationship, we find that the coefficients of determination for structural equations increase from the first year to the sixth for general values, while the opposite is true for specific values (see Table 1). That is, the amount of variance explained by our theoretical models increases as the students progress through medical school when general values are used as predictors of interest in medical specialty, and decreases when specific values are used as predictors. The amount of variance explained by the general values grows increasingly large from the first year of medical school to the last. The coefficient of

determination for Model 1a (first year general values and interests) is .278. For the Model 1b (second year general values and intersts) it has increased to .464. Finally, for Model 1c (sixth year general values and interests), the coefficient of determination is .579. In contrast, the amount of variance explained by specific values decreases as the students progress through medical school. The coefficient of determination for Model 2a (first year specific values and interests) is .383. For Model 2b (second year specific values and interests), the coefficient of determination is .391. Model 2c (sixth year specific values and interests) shows a coefficient of determination of .272. Hypothesis 3 is supported for the general value-interest models (Models 1a,b,c) but not for the specific value-interest models (Models 2a,b,c). This implies that our Hypothesis 4 is rejected: specific values do not increase in their explanatory with increase in experience but, opposite to our expectation, general values gain predictive power.

Discussion

We tested four main hypotheses in this paper concerning the relationship between values and interest. For Hypothesis 1 we investigated whether the specificity principle from the attitude-behavior domain also holds up for the value-interest domain. This hypothesis was not supported; general values predict interest in medical specialization significantly better in the second and sixth years of medical school than do specific values.

For the second hypothesis, we examined whether the findings in the medical education literature could be replicated, i.e., interest in

psychiatary and surgery are best predicted by general values while interest in other specialties are better predicted by specific values. We found that the amount of experience within the field of interest is crucial to the understanding of whether general or specific values predict interest in a particular medical specialty. In Years 1 and 2 specific values tended to be the best predictors of interest in entering medical specialties; and in the sixth year, general values were better predictors for interest in all seven specialties.

Finally, for Hypotheses 3 and 4, we stated that the predictability of interest should increase as a positive function of the degree of experience within the interest domain (Hypothesis 3) and, furthermore, this should especially be the case for specific values (Hypothesis 4). An interesting result emerged: we found that with increasing experience the general values were much better predictors, while the amount of experience does not influence the importance of the specific values.

Directions for further research

Concerning the specificity problem, we suggest that further research is needed to determine if preferences and inferences are truly functionally different when used as predictors of behavioral intentions and interests. Our findings suggest that general preferences are more important than specific preferences for the prediction of specific behavioral choices. We will examine whether these findings can be replicated in a longitudinal data set of standard medical school students for our next piece of research.

Regarding the importance of experience as a moderator variable for

the prediction of interests, we again find that it is the general values, not the specific values, that are increasingly important in this domain. In our next step of research we will test two alternative interpretations of this finding. For the first interpretation we would argue that it is not the amount of experience in the medical setting that enhances the importance of general values over time, but that it may be a function of personal development. The values of the eighteen year old students who responded to the questionnaire in Year 1 of our study might develop through the sixth year and these personal developments may explain our findings.

Our second interpretation suggests that our results are due to a greater salience of the values after having had experience with them. We will investigate these two interpretations in our next study in which we will examine the 23 to 27 year old medical students who should have a higher level of personal and value development when they enter medical school, but who undergo a major degree of experience with the medical school setting in the course of the four year medical training.

After the predominance of the cognitive perspective in psychology for so many years, it seems worthwhile to return to including values in psychological research. The understanding of both the cognitive and the affective side of human behavior should be a contribution to the understanding of human behavior in general.

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Table 1

Results of the LISREL Analyses

Model	Year	Adjusted Goodness of Fit	Degrees of Freedom	Chi-square	Coefficient of Determination for Structural Equations
Model 1a General Values > Interest	1	.903	82	112	.278
Model 1b General Values > Interest	2	.899	75	107	.464
Model 1c General Values > Interest	6	.857	91	127	.579
Model 2a Specific Values > Interest	1	.919	102	112	.383
Model 2b Specific Values > Interest	2	.86	102	191	.391
Model 2c Specific Values > Interest	6	.81	102	198	.272

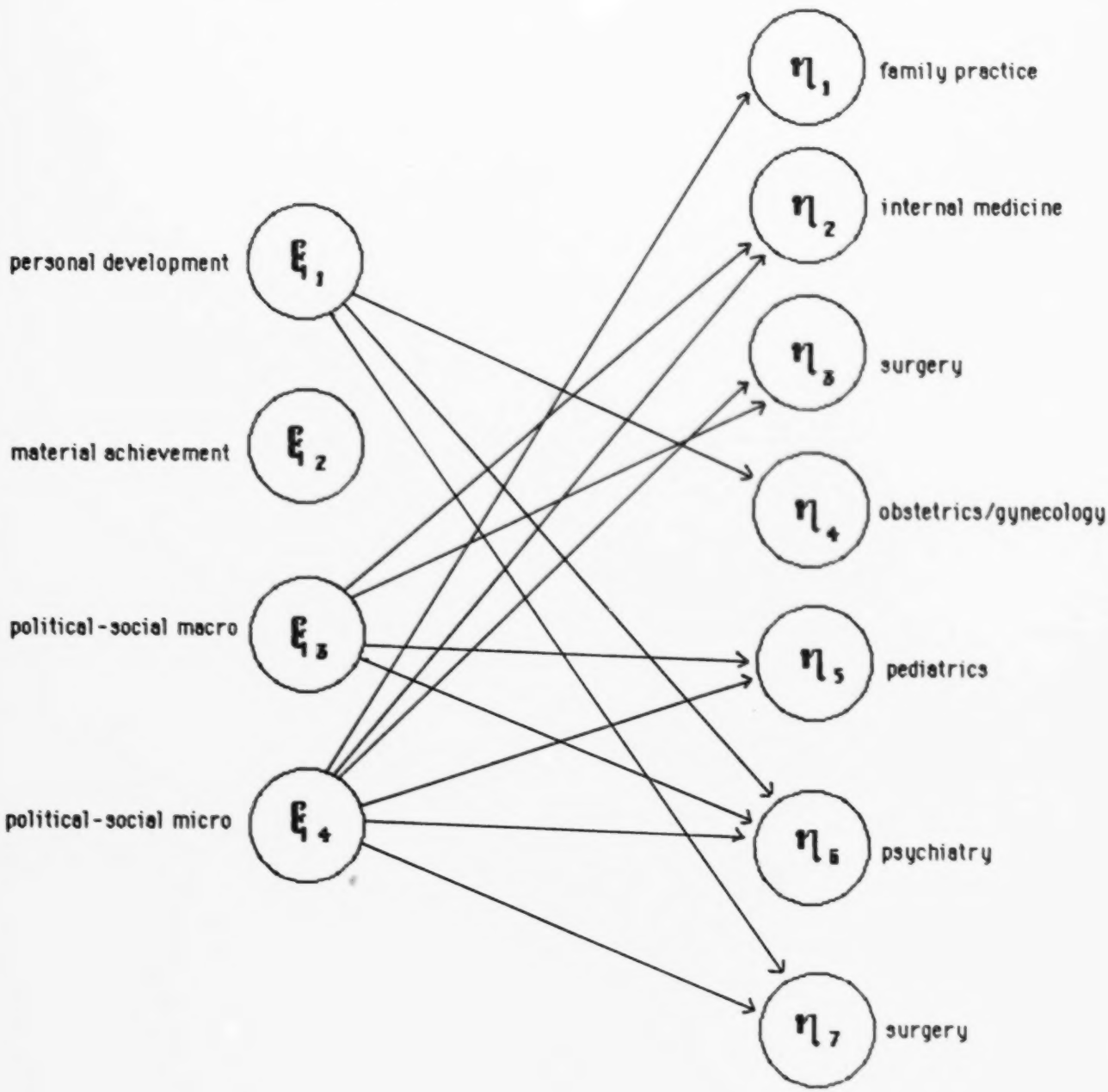
Table 2

Amount of Explained Variance of the Latent Endogenous Variables in years 1, 2 and 6 in both Models 1 and 2

interest in medical specialty	Year 1 Values specific		Year 1 Values general	Year 2 Values specific		Year 2 Values general	Year 6 Values specific		Year 6 Values general
psychiatry	.055	<	.067	.014	<	.066	.051	<	.144
surgery	.177	<	.012	.083	<	.087	.029	<	.119
family practice	.17	>	.085	.11	>	.183	.052	>	.117
internal medicine	.076	>	.08	.127	>	.161	.047	>	.165
obstetrics/gynecology	.048	>	.038	.011	>	.045	.008	>	.122
pediatrics	.036	>	.014	.134	>	.085	.055	>	.109
radiology	.113	>	.006	.088	>	.072	.004	>	.096

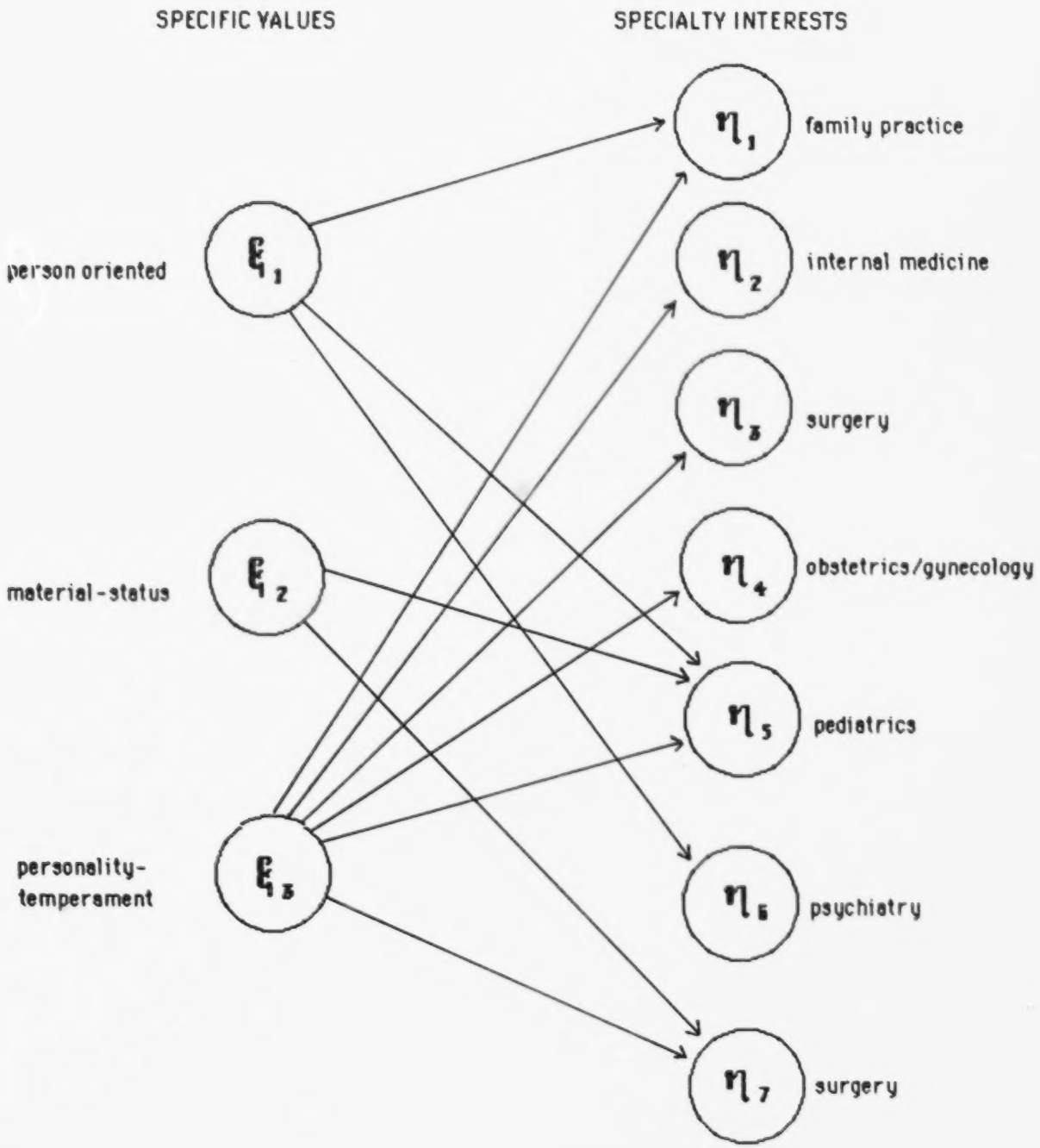
In medical education literature: < indicates general values predict specialty interest
> indicates specific values predict specialty interest

Figure 1



Model 1. Structural model in which general values predict interest in medical specialization

Figure 2



Model 2. Structural model in which specific values predict interest in medical specialization